BEAVER

(CASTOR CANADENSIS)

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HINTERLAND WHO'S WHO

Beaver

(Castor canadensis)

No other animal has influenced a nation to the extent that the beaver has influenced the development of Canada. Champlain pushed westward to extend the beaver trade of New France in 1613. Radisson and Des Groseilliers went onward to the Lake Superior and James Bay regions in the period 1659 to 1661 in search of beaver. The Hudson's Bay Company established the northern fur trade in 1670. The Nor'westers, operating out of Montreal after 1783, went to the farthest reaches of Canada in search of beaver. We have recognized the beaver as a national symbol on stamps, coins, and emblems; we have named literally hundreds of lakes, towns, rivers, and hill ranges after the beaver.

Distribution and physical characteristics

Beaver are found throughout Canada, north to the mouth of the Mackenzie River on the Arctic Ocean, but they are seen only occasionally on the tundra of the North. Even on the high, dry, upland prairie of Saskatchewan and Alberta,

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wherever streams and deciduous (broad-leaved) trees or shrubs are found, the beaver is likely to be found also.

Its North American range extends through most of Alaska, and at one time included most of Continental United States and a portion of Northern Mexico. It has been exterminated in many states, but others contain thriving populations.

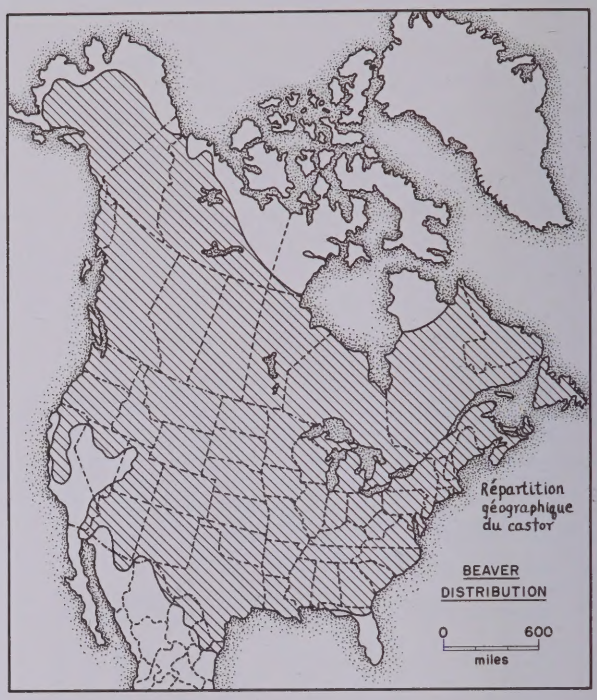
In the 12th century beaver were found in England and Wales, and throughout Eurasia at least as far east as the Yenisei River and as far south as Spain and Italy. It became extinct in the British Isles a century or so after the Norman conquest. By the early 1900's only a few remained in Eurasia, mainly in small colonies on the remote reaches of a few northern rivers of the U.S.S.R.

The beaver is the largest rodent in North America, and is the largest in the world except for the capybara of South America. At one time, in the Pleistocene period—the era of the mastodons and mammoths—giant beaver were found in North America. Their length including tail was probably about nine feet, and they may have weighed 800 pounds.

Present day beaver are much smaller. Adults average 40 to 60 pounds. Exceptionally large ones reach 100 pounds. Including its 12- or 13-inch tail a large beaver may be four feet long.

An early writer named Wood described the beaver's appearance quaintly but accurately: "His shape is thicke and short, having likewise short legs, feet like a mole before, and behind like a goos, and a broad tayle in forme like a shoo-soale, very tough and strong; his head is something like an Otter's head, saving that his teeth before, be placed like the teeth of a Rabbit, two above and two beneath; sharpe and broad with which he cuts down trees as thick as a man's thigh."

Very compact and rotund, the beaver when in walking stance on land appears to have no neck at all, the round profile of the head merging into the round profile of the back. The eyes are quite small and beady, and the beaver sees moderately well both under water and above water. The hind feet are very large, with five long blunt-clawed toes which are fully webbed for swimming. The two inside claws on each hind foot are double, with upper and lower sections which are movable and come together like tiny pliers. These claws are used for combing the fur. The front feet are small, without



webs, and the toes end in long sharp claws suited to digging.

The front paws are very dexterous—almost like hands, and with them the beaver can hold and carry sticks, stones, and mud, and perform a variety of complex construction tasks.

Only the hind feet are used to propel the animal through the water, occasionally with some aid from the tail. The broad hind feet provide good support on soft muddy ground. The legs are short, and on land the beaver is ungainly and slow. When frightened it can travel quite quickly in an awkward bounding gallop, but over a distance of a few hundred feet a man can run a beaver down. In the water it is a graceful, strong swimmer, both under water and on the surface.

Its sense of smell is acute. The nostrils are small and can be closed for underwater swimming. Hearing is also excellent, and the ears, too, are valvular and become tightly closed under water.

The beaver's long, sharp, strong incisors consist of material that is hardest on the forward face. Consequently, as the teeth wear away with constant gnawing, the outer tips of the incisors remain chisel-sharp. With them a beaver is able to fell very large trees—the largest on record being 46 inches in diameter. The lips can be closed behind the incisors, permitting the beaver to gnaw under water.

When swimming under water the beaver

uses its tail as a four-way rudder. The tail of a large beaver may be 12 inches long, perhaps six or seven inches wide, and one and one-half inches thick. It is covered with leathery scales and sparse, coarse hairs. The tail contains a good deal of fat, but it is flexible and very muscular and strong. When diving after being frightened, a beaver slaps the water with its tail, making a noise like a pistol shot, which warns all beaver in the vicinity that danger is near. The tail acts as a prop when the beaver is sitting upright to gnaw through a tree trunk, and acts as a counter-balance and support when the animal is walking on its hind legs carrying building materials like mud, stones, or branches in its front paws.

The fur is very dense, consisting of a mat of very fine underfur about three-quarters of an inch long, and an outer layer of heavy guard hairs about two and one-half inches long. Through constant combing and oiling this dense pelt is kept waterproof. Even after swimming under water for six or seven minutes the beaver is not wet to the skin. Oil is obtained from two glands near the anus, and combing and application of oil is done with both front and hind feet; the combing claws being used to straighten kinks and snarls, and perhaps to comb mites and other insect parasites out of the fur.

Engineering works

There are many false legends about the beaver, such as the one that credits him with the intelligence to fell a tree in the direction he chooses, like an expert lumberjack. In actual fact, a fair proportion of trees felled by beaver fall against a nearby tree and remain more or less upright. Early writings about the beaver insist that the animal uses its tail as a trowel. This is not so. The front paws are used to plaster mud on dams and lodges.

But the actual feats of the beaver are impressive enough that legends are not necessary. The dam itself is an extraordinary piece of construction. The purpose of the dam is to create a pond deep enough that it will not freeze to the bottom during the coldest winter, and which will provide deep-water storage for the winter food supply—deep enough that most of the sticks and twigs of the food cache are below the ice.

The dam is begun by laying sticks in the stream bed with the butt end imbedded in the bottom mud and the other end pointing downstream so the branches act as anchor prongs in the mud. Twigs, mud, stones, and any other movable materials are laid in place in front of and around the first rows of sticks, and the eventual result is a very stable earthwork which can withstand great water pressure and erosion by running water. Dams 18 feet in height have been discovered. Often such high dams are "backed up" by secondary dams downstream, which raise the water level on the downstream side of the main dam, thus reducing the tremendous water pressure against the upstream side.

A beaver family of five or six may require an acre of dense poplar trees for its food supply each year. As trees are cleared away from the edge of the pond, the beaver go farther and farther afield in their logging operation—often 400 feet or more from the pond. They cut down trees and shrubs, and make logging trails so they can drag heavy sticks overland more easily. Their most impressive feat in transportation is the building of canals. Canals may extend several hundred feet along the base of a wooded hillside. Often three feet wide and a couple of feet deep, the canals provide easy transportation of food supplies. Sometimes canals are dammed to maintain the water level on uneven ground, and occasionally nearby streams are diverted into canals to maintain the water level.

Many beaver houses are merely burrows in a stream bank; others are "lodges" built in the beaver pond or on an adjacent shore. Most lodges are about 15 feet in diameter and five or six feet high, with a single living compartment four or five feet in diameter and about two feet high. Lodges 27 feet in diameter have been discovered. Some of the larger ones have more than one apartment—each apartment usually occupied by a separate family group. Lodges are made up mainly of intertangled sticks and twigs, and as freezing weather begins the beaver plaster them with mud, making a concrete-like outer coat which no wolf, wolverine, or lynx can break through. Each family compartment has two openings, both under water, for exit and entry.

Life history

Beaver are monogamous, and mate for life. Kits, averaging three to four per litter, are usually born in June, but sometimes as late as

September. They are well-furred when born, with teeth already cut—exact miniatures of their parents. The young stay with their parents until they are two years old, at which time they are driven away from the pond, and migrate along streams or across country until they find mates and suitable building sites, whereupon they establish their own dam and house.

Dam building is often done in August, but beaver will repair a break in their dam whenever possible. House-building comes later, perhaps in September. As the first frosts of October occur, the tempo of beaver life speeds up as they harvest their winter food supply. Trees are cut down, gnawed into short lengths, and toted to the pond, for underwater storage. All winter the beaver bring sticks from their underwater cache into the lodge to gnaw the succulent bark, at a rate of about 20 ounces of bark a day for an adult beaver.

The otter is an important predator, being able to enter the lodge via the water and kill the beaver inside. Wolverine, wolf, and lynx occasionally surprise beaver on land. Mink take beaver kits quite frequently, and hawks and owls take them occasionally.

The beaver fur trade and beaver management

In the early days of the fur trade, up to 170,000 pelts a year were sold in London and Edinburgh, most of them being used for felt to make the then-popular beaver hats, valued at 80 or 90 shillings. A very large adult beaver skin might yield enough fur for 18 hats. The standard price in eastern North America was $4.00 per pelt in the later years of the trade, but the Indian trapper might trade a skin for a few cheap knives or a drink of rum.

After the turn of the century, the trade in beaver declined, partly with the decline of the beaver hat as fashionable headwear, and partly because the beaver themselves were becoming scarcer all over North America. Many large regions were completely without beaver during most of the first half of this century. More recently, sensible conservation plans have been put into effect by the Federal and Provincial Governments, with the co-operation of the trappers. Beaver have been reintroduced into many areas that were stripped by early trappers. As recently as 1954, the Canadian Wildlife Service flew nearly 100 beaver into an area north of Great Slave Lake in the Northwest Territories. As a result of reintroductions and improved trapping laws, there has been a tremendous upsurge in the number of beaver in Canada. In Saskatchewan, for example, the annual catch rose from about 500 in the 1940's to several thousand in the 1950's. In some areas the problem is not how to protect the beaver population, but to harvest enough to prevent over-population and starvation due to over-consumption of food supplies. In the 1962-63 trapping season, 436,780 beaver pelts were marketed in Canada, and the average value was $12.48.

The multitudes of beaver on the headwaters of our major streams stabilize stream flow, prevent stream bed erosion, create trout ponds, and improve habitat for many forms of wildlife. They are nature's great conservationists and are valuable fur bearers, as well as a source of food for trappers. They merit careful study and intelligent management.

How does the Canadian Wildlife Service fit into the national wildlife picture?

The Canadian Wildlife Service carries out both wildlife research and management. As a division of the National Parks Branch, Department of Northern Affairs and National Resources, it is charged with the task of carrying out federal responsibilities with respect to wildlife, a renewable resource of ever-increasing importance to the national welfare and economy.

Each province has control over the natural resources within its boundaries, including wildlife. However, because Canada signed the Migratory Birds Treaty with the United States in 1916, there is a federal responsibility for the management and protection of migratory birds. The Canadian Wildlife Service administers the Act for the Federal Government. In practice, Federal and Provincial Governments co-operate in all matters concerning migratory birds. The Canadian Wildlife Service studies migratory birds throughout Canada and conducts scientific research into other wildlife problems in the Northwest Territories, the Yukon Territory, and Canada's National Parks; it also co-operates with the administrative agencies concerned when wildlife management programs indicated by research are instituted.

For further information on wildlife in your province please contact your chief provincial game officer.

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